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FILED FOR  
IN THE UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF ILLINOIS  
04 AUG -6 PM  
EASTERN DIVISION

DOCKETED

AUG 09 2004

FRENI BREMBO, S.p.A., an Italian  
Corporation

and

BREMBO NORTH AMERICA, INC.,  
a Delaware Corporation,

Plaintiffs,

v.

ALCON COMPONENTS, LTD, a  
British Corporation

and

ALCON COMPONENTS (USA) INC., a  
Delaware Corporation,

Defendants.

Civil Action No.

04C 5217

JUDGE KENNELLY

MAGISTRATE JUDGE BOBRICK

Jury Trial Demanded

**COMPLAINT FOR PATENT INFRINGEMENT**

1. Freni Brembo, S.p.A. and Brembo North America, Inc. (collectively "Plaintiffs") bring this complaint against Defendants Alcon Components, Ltd. and Alcon Components (USA) Inc. (collectively "Defendants") and as their complaint against Defendants, Plaintiffs allege as follows:

### **NATURE OF ACTION**

2. This is an action for patent infringement arising under the laws of the United States, 35 U.S.C. § 1, *et seq.*, for Defendants' using, selling, offering to sell, making, having made and/or importing into the United States goods that infringe Plaintiffs' U.S. Patent No. 6,446,766 on a Disk Brake For Motor Vehicles and The Like.

### **THE PARTIES**

3. Freni Brembo, S.p.A. is a company existing and incorporated under the Law of Italy with a principal place of business at Via Brembo 25, 24035 Curno, Italy.

4. Brembo North America, Inc. is a Delaware Corporation with its principal place of business at 1585 Sunflower, Ave., Costa Mesa, CA 92626-1532, and is a wholly owned subsidiary of Freni Brembo, S.p.A.

5. Defendant Alcon Components, Ltd. is a company existing and incorporated under the Law of the United Kingdom with its principal place of business at Apollo Teamworth, Staffordshire B79 7TN, England. Alcon Components Ltd. has done and continues to do business in this judicial district and has committed acts of patent infringement within the United States.

6. Defendant Alcon Components (USA) Inc. is a Delaware Corporation with its principal place of business at 1032 National Pkwy, Schaumburg, IL 60173, and is the United States office for Defendant Alcon Components, Ltd. Alcon Components (USA) Inc. has an office at 716 N. Arlington Heights Rd., Arlington Heights, IL 60004.

Alcon Components (USA) Inc. is registered to do business in Illinois with the Illinois Secretary of State's Office.

### **JURISDICTION AND VENUE**

7. Jurisdiction and venue in this district are based upon the provisions of 28 U.S.C. §§ 1331, 1338(a), 35 U.S.C. § 281 and 28 U.S.C. §§ 1391 and 1400(b).

8. This Court has personal jurisdiction over Defendants pursuant to 735 ILCS 5/2-209(a) in that Defendants committed the acts complained of herein in Illinois, and transact business within Illinois including, among other things, importing, offering to sell and/or selling products that infringe U.S. Patent No. 6,446,766 through their Illinois office and sales representatives in Illinois and the United States.

9. Alcon Components, Ltd. (UK) produces disk brakes for motor vehicles that it calls "Through Piston Cooled" (TPC) devices and it sells these products through distributors within the United States. Alcon Components (USA), Inc., located in this district, is involved with these sales.

10. Defendants have imported and continue to import TPC devices into the United States through Alcon Components (USA) Inc., located in this district, as well as distributors, catalog sellers, and sales representatives located within the United States.

11. Defendants have deliberately inserted TPC devices which embody technology protected by United States Patent No. 6,446,766 into the stream of commerce, and in particular into this District by advertising via their website, [www.alcon.co.uk](http://www.alcon.co.uk), and through the activities of its office in this district.

12. Defendants have maintained systematic and continuous contacts with this District through their conducting of business through their Illinois office and through advertisements on their website.

13. Venue is proper in this district as to Alcon Components (USA) Inc. pursuant to 28 U.S.C. §§ 1391(b)(2) and 1400(b), in that Defendant Alcon Components (USA) Inc. resides in this district. Venue is proper in this district as to Defendant Alcon Components, Ltd. pursuant to 28 U.S.C. § 1391(d). Defendants have engaged in one or more acts of infringement within the United States, including, *inter alia*, making, using and selling and/or offering to sell and/or importing goods that infringe U.S. Patent No. 6,446,766 through the Illinois office of Alcon Components, Inc., distributors located throughout the United States, and over the Internet to citizens located within this district, which acts are the subject matter of this action.

**INFRINGEMENT OF UNITED STATES PATENT NO. 6,446,766**

14. On September 10, 2002, United States Patent No. 6,446,766 (the '766 patent) entitled "Disk Brake for Motor Vehicles and the Like" was duly and legally issued to Freni Brembo, S.p.A. A copy of the '766 patent is attached as Exhibit A to the Complaint. Since its issuance, the '766 patent has been in full force and effect.

15. Defendants sell, within the United States, devices which embody the technology covered by the '766 patent. Defendants call these devices "Through Piston Cooled" (TPC) caliper devices. Copies of pictures of the TPC device are attached as Exhibit B to the Complaint.

16. Defendants introduced the TPC device in August/September of 2003 for testing within the United States.

17. Without permission or license from Plaintiffs, Defendants have made, are making, have sold, are selling, are having sold, have offered for sale, are offering to sell, have imported, and/or are importing into the United States products, including, *inter alia*, TPC devices that infringe Plaintiffs' exclusive rights in and to the '766 patent in violation of 35 U.S.C. § 271.

18. Defendants also have sold, are selling, have offered for sale, are importing, and/or are offering to sell products, such as the TPC device, that infringe Plaintiffs' exclusive rights in and to the '766 patent, in violation of 35 U.S.C. § 271, on one or more Internet sites that are publicly accessible to citizens of the State of Illinois and that actively solicit sales and use of such products within the State of Illinois by, *inter alia*, instructing citizens of this state how and/or where to purchase such products.

19. The Defendants' TPC devices have been used in the United States in NASCAR races in Martinsville, North Carolina and elsewhere.

20. Defendants' TPC device was used at Indianapolis Motor Speedway, June 18-20, 2004, for a Grand Prix race.

21. Defendants' infringement of the '766 patent has been willful, deliberate and in conscious disregard of Plaintiffs' rights, making this an exceptional case within the meaning of 35 U.S.C. § 285.

22. Defendants will continue to infringe the '766 patent unless enjoined by this Court.

23. Notice of infringement has been provided to the Defendants at least by a letter from Plaintiffs' counsel on May 27, 2004, informing Defendants of their infringement, and pursuant to 35 U.S.C. § 287.

**PRAYER FOR RELIEF**

WHEREFORE, Freni Brembo, S.p.A. and Brembo North America, Inc. pray for judgment as follows:

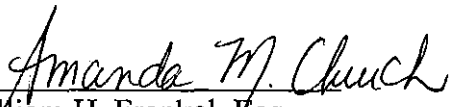
1. Defendants be adjudged to have infringed United States Patent No. 6,446,766.
2. A preliminary and permanent injunction be issued enjoining Defendants, their officers, agents and employees from further infringement of United States Patent No. 6,446,766.
3. An accounting be had for the profits and other damages arising out of Defendants infringement of United States Patent No. 6,446,766, and that the damages be trebled and awarded to Plaintiffs together with prejudgment and post-judgment interest.
4. This case be decreed an "exceptional case" within the meaning of 35 U.S.C. § 285 and reasonable attorneys' fees be awarded to Plaintiffs.
5. Plaintiffs be awarded such other costs and further relief as the Court deems just and proper.

**DEMAND FOR JURY TRIAL**

Plaintiffs hereby demand a jury trial on the causes of action set forth herein.

DATED: August 6, 2004

Respectfully Submitted,

  
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# *Exhibit A*





US006446766B1

(12) **United States Patent**  
Cornolti et al.

(10) **Patent No.:** US 6,446,766 B1  
(45) **Date of Patent:** Sep. 10, 2002

(54) **DISK BRAKE FOR MOTOR VEHICLES AND THE LIKE**

5,002,160 A \* 3/1991 Weiler et al. .... 188/71.6  
5,238,090 A \* 8/1993 Weiler ..... 188/71.6

(75) **Inventors:** Raffaello Cornolti, Sorisolo; Alberto Previtali, Palazzago, both of (IT)

#### FOREIGN PATENT DOCUMENTS

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DE	3833552	10/1988	65/847
GB	2214581	* 9/1989	
JP	62067337	3/1987	65/847
WO	8301664	5/1983	65/847

(73) **Assignee:** Freni Brembo S.p.A., Bergamo (IT)

(\*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

\* cited by examiner

(21) **Appl. No.:** 09/456,039

*Primary Examiner*—Jack Lavinder

(22) **Filed:** Dec. 6, 1999

*Assistant Examiner*—Mariano Sy

(51) **Int. Cl.** F16D 55/02

(74) *Attorney, Agent, or Firm*—Sofer & Haroun, LLP

(52) **U.S. Cl.** 188/71.6; 188/264 A; 188/218

(58) **Field of Search** 188/71.1, 71.6, 188/264 A, 264 AA, 218 XL

#### (57) ABSTRACT

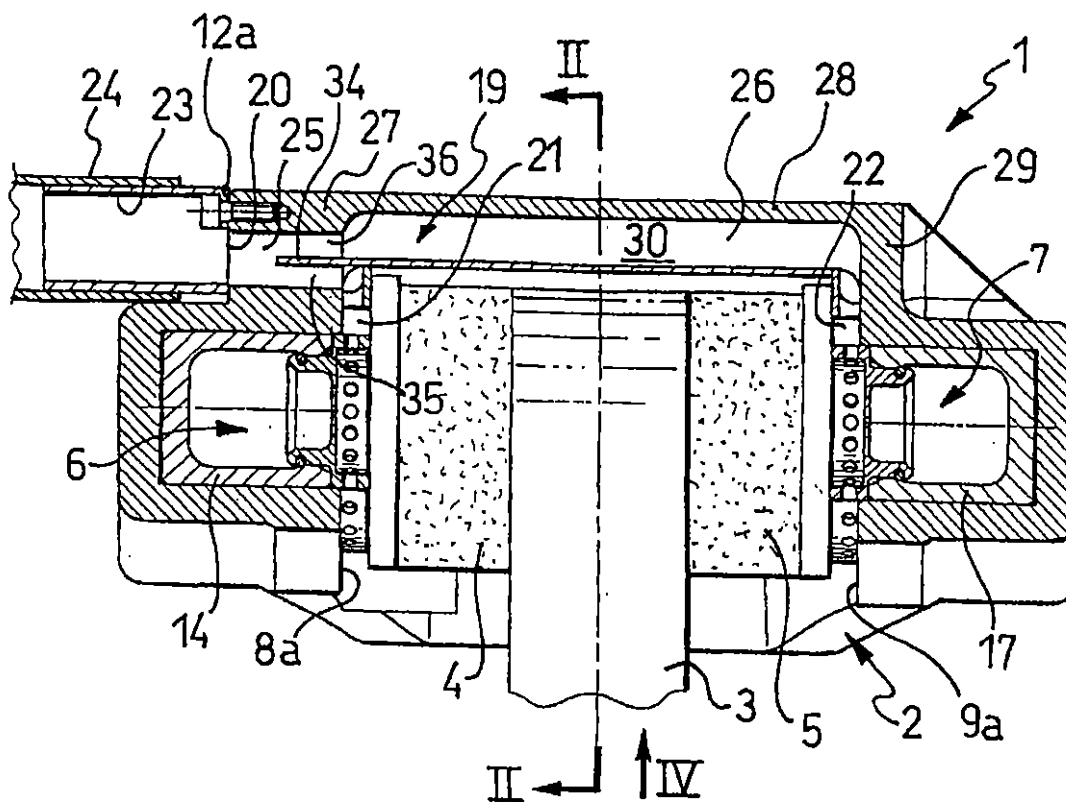
A functionally excellent and structurally simple disk brake with a caliper body formed as a single part constituted by a hub-side elongate element, by a wheel-side elongate element, and by connecting bridges extending astride a disk, hydraulic pressure pistons housed in the elongate elements and acting on respective pads by way of radiator elements, as well as a duct for the passage of cooling air, formed inside the caliper body and extending between the inlet opening and outlet openings facing these radiator elements.

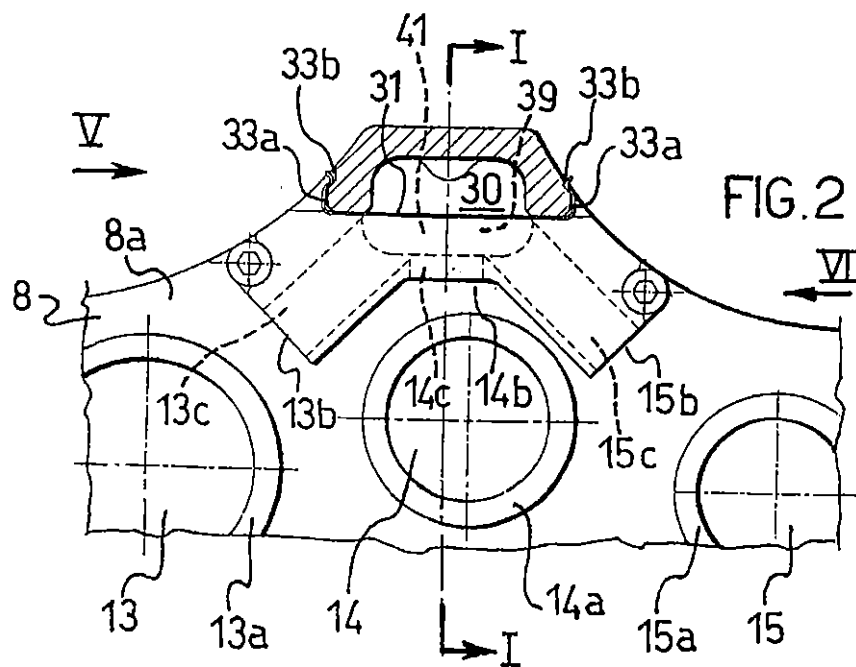
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3,592,298 A \* 7/1971 Leffert et al. .... 188/264 CC  
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3,983,974 A \* 10/1976 Dowell et al. .... 188/264 AA  
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24 Claims, 5 Drawing Sheets





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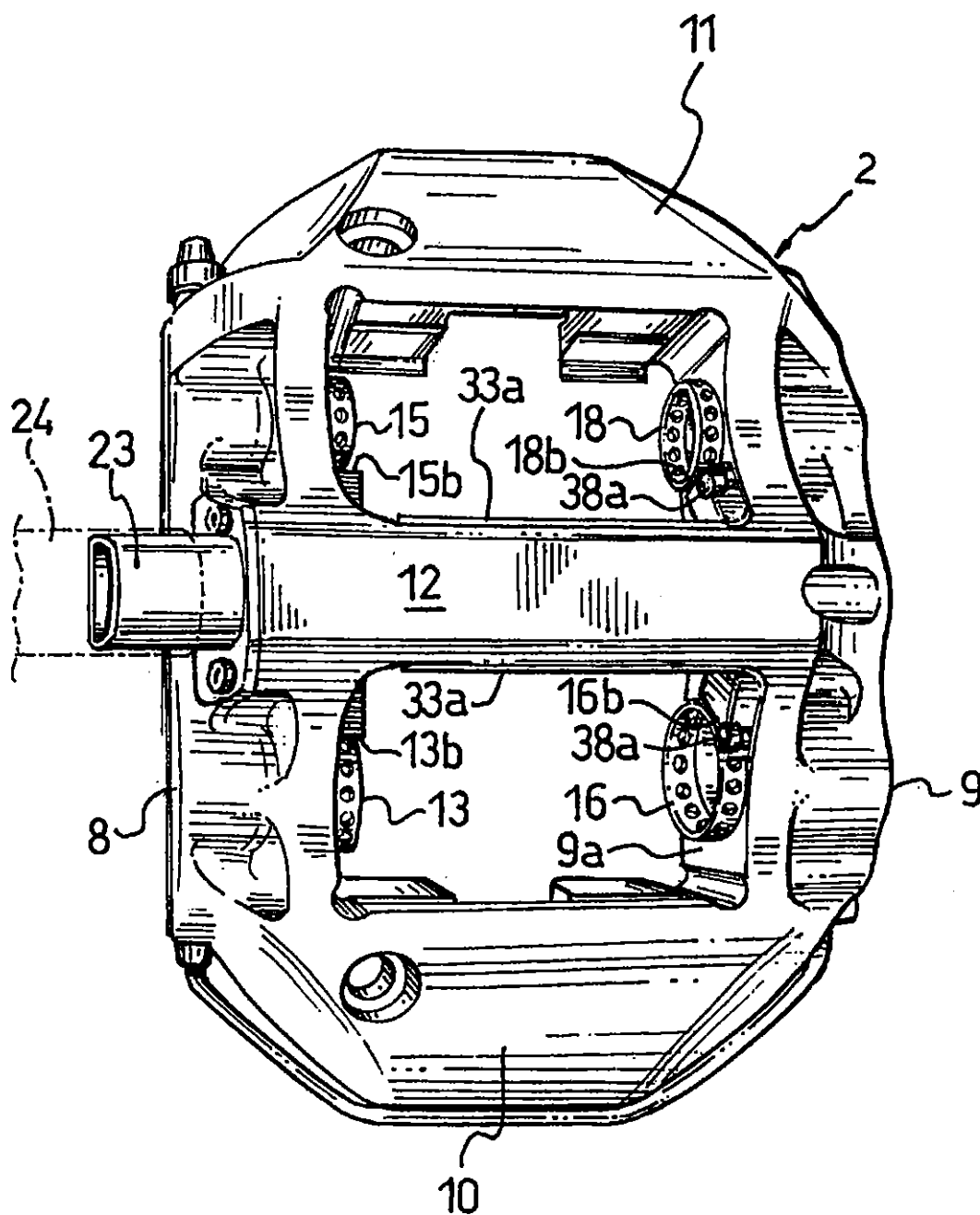


FIG. 3

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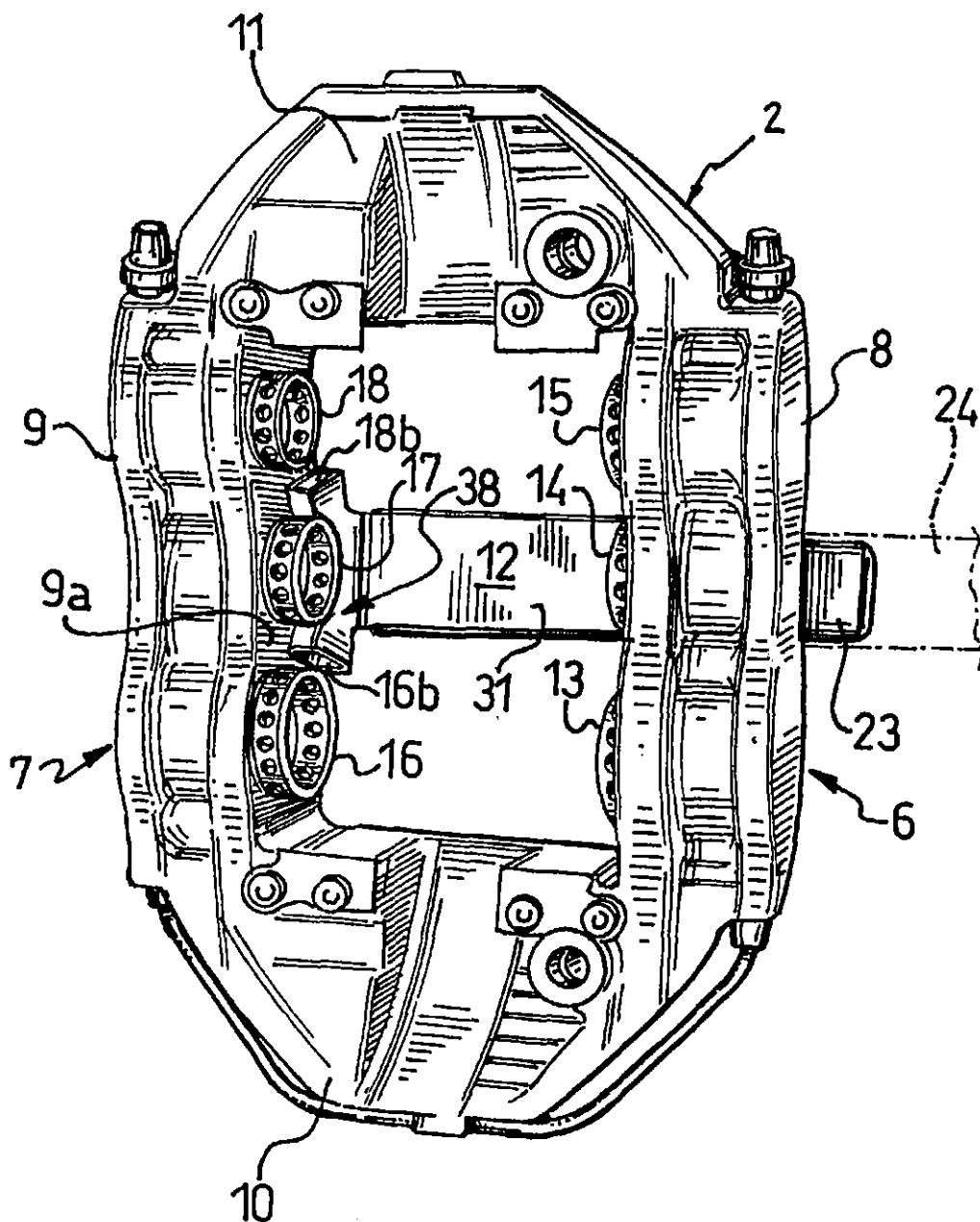


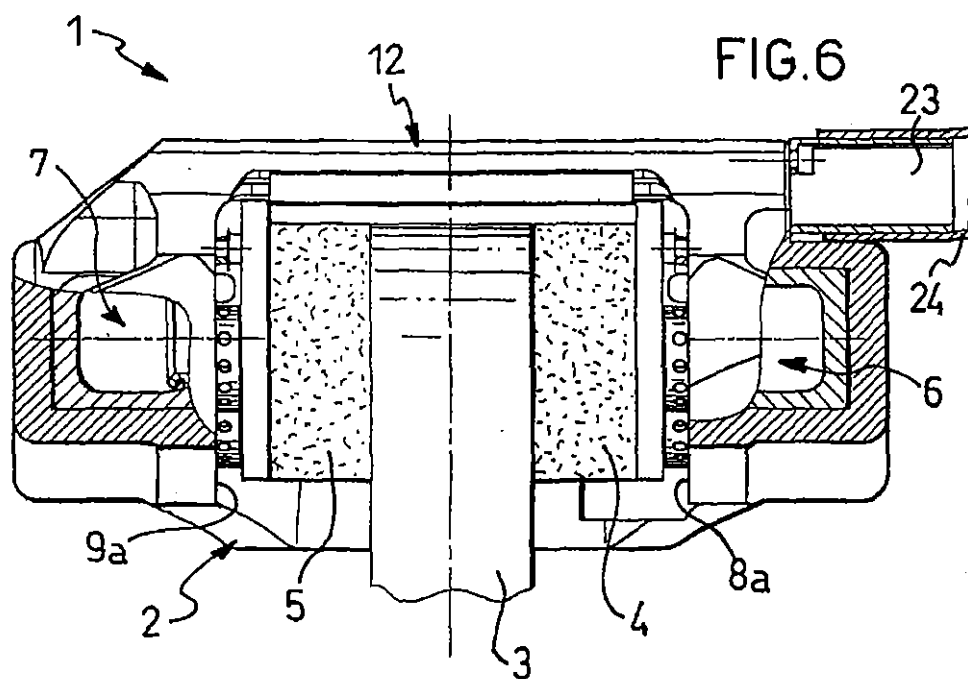
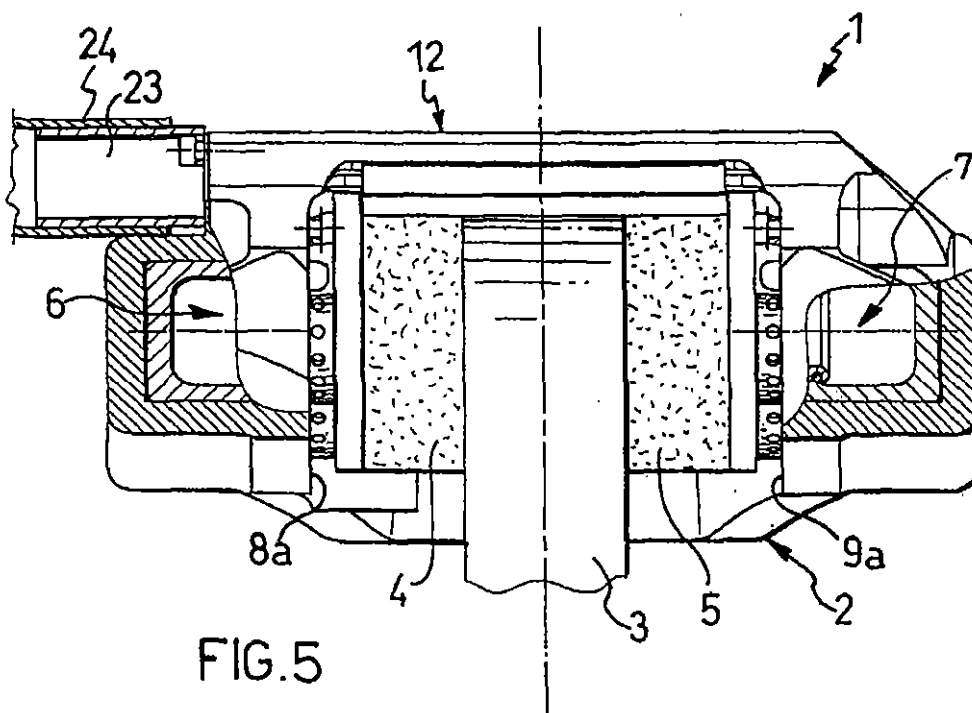
FIG.4

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## DISK BRAKE FOR MOTOR VEHICLES AND THE LIKE

### FIELD OF THE INVENTION

The present invention relates to a disk brake of the type comprising a caliper body, in which a hub-side elongate element, a wheel-side elongate element and connecting bridges extending astride a disk constitute a single part, and pressure means housed in the elongate elements and acting on respective pads by means of radiator elements.

### BACKGROUND OF THE INVENTION

Disk brakes of the type specified are particularly suitable for motor vehicles and, in particular, for racing cars or at least high-powered motor vehicles.

As is known, there is a need to prevent the heat generated in the pads during braking from being transmitted through the pistons to the brake fluid. Otherwise, there would be a risk of the brake fluid boiling.

According to the prior art, attempts have been made to direct as much air as possible towards the radiator elements of the pistons so as to form a barrier to the passage of the heat from the pads to the brake fluid.

The various means currently used for directing the air towards the radiator elements are structurally complex and obstruct the handling of the pads and of the caliper body after use of the car, for example, at the end of a race.

The problem upon which the present invention is based is to devise a disk brake of the type specified which has structural and functional characteristics such as to satisfy the aforesaid need and, at the same time, to overcome the problems mentioned with reference to the prior art.

### SUMMARY OF THE INVENTION

This problem is solved by a disk brake of the type specified which is characterized in that it comprises a duct for the passage of cooling air, formed inside the caliper body and extending between an inlet opening and at least one outlet opening facing at least one radiator element of the radiator elements.

### BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and the advantages of the disk brake according to the present invention will become clear from the following description of a preferred embodiment thereof, given by way of non-limiting example, with reference to the appended drawings, in which:

FIG. 1 is an elevational view of a disk brake according to the invention, sectioned on the line I—I,

FIG. 2 shows a detail of the disk brake of FIG. 1, sectioned on the line II—II,

FIG. 3 is a perspective view, taken on the arrow III, showing a detail of the disk brake of FIG. 1, substantially in plan,

FIG. 4 is a perspective view, taken on the arrow IV, showing the detail of FIG. 3, substantially from below,

FIG. 5 is a partially-sectioned view of the disk brake of FIG. 1, taken on the arrow V,

FIG. 6 is a partially-sectioned view of the disk brake of FIG. 1, taken on the arrow VI,

FIG. 7 is a perspective view of a detail of the disk brake of FIG. 1, and

FIG. 8 is a perspective view of the detail of FIG. 7, with parts separated.

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## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

With reference to the appended drawings, a disk brake for a motor-vehicle in general, and for a racing car or, in any case, high-powered car in particular, is generally indicated 1.

The disk brake 1 comprises a caliper body 2 and a disc 3 both for fixing to a hub of the motor vehicle for the attachment of a vehicle wheel.

Two pads 4 and 5 mounted on the caliper body 2 are acted on by respective pressure means 6 and 7, supported by the caliper body 2 and, more precisely, supported by the elongate hub-side element 8 and by the elongate wheel-side element 9, respectively.

The caliper body 2 is formed as a single piece of aluminium alloy with good mechanical characteristics, by machining, from a semi-finished blank, for example a rolled section, or from a moulded piece. The caliper body comprises a hub-side elongate element 8 and a wheel-side elongate element 9. The elongate elements 8 and 9 have respective flat inner surfaces 8a and 9a facing towards the disk 3 and extend substantially tangentially relative to the disk 3. They support and house the respective pressure means 6 and 7.

The caliper body 2 is completed by three connecting bridges 10, 11 and 12 formed integrally with the elongate elements 8 and 9 and extending like bridges over the disk 3. The purpose of the bridges 10, 11 and 12 is to interconnect the elongate elements 8 and 9 rigidly.

More precisely, the three connecting bridges comprise two end connecting bridges 10 and 11 which connect the front and rear ends of the elongate elements 8 and 9 and a central connecting bridge 12 which connects the elongate elements at two intermediate points thereof.

In the embodiment shown, the pressure means 6 housed in the hub-side elongate element 8 comprise three hydraulic pistons 13, 14 and 15 spread out along the length of the elongate element 8 and having diameters which decrease from the first, front piston 13 to the last, rear piston 15.

Similarly, the pressure means 7 housed in the wheel-side elongate element 9 comprise three hydraulic pistons 16, 17 and 18 spread out along the length of the elongate element 9 and having diameters which also decrease from the first, front piston 16 to the last, rear piston 18.

It should be noted that each piston has an active end which is in contact with the pad. These active ends are formed generally so as to dissipate heat, that is, to reduce the amount of heat which passes from the pads to the brake fluid.

In the embodiment shown, these active ends, which are called radiator elements, have openings in the form of circular holes, which are indicated in the drawings by reference numerals 13a to 18a each of which relates to a respective one of the pistons 13 to 18.

The disk brake 1 according to the present invention comprises a duct 19 provided for the passage of cooling air for cooling the radiator elements 13a-18a, the duct 19 being formed inside the caliper body 2.

The duct 19 advantageously extends through the central bridge 12 from an end 12a of the duct disposed adjacent the hub-side elongate element 8 and extends between an inlet opening 20 and two outlet openings 21 and 22 disposed at the height of and facing the radiator elements 13a, 14a and 15a and the radiator elements 16a, 17a and 18a, respectively.

The inlet opening 20 preferably has a connector 23 for the connection of the duct 19 to a cooling-air feed pipe 24, for example, for air coming from a suitable air-intake of the motor-vehicle.

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The duct 19 has a first portion 25 in the form of a hole extending in an end portion 27 of the central bridge 12 disposed adjacent the hub-side elongate element 8, as well as a second portion 26 extending along and inside a central portion 28 of the central bridge as far as an end portion 29. The second portion 26 is constituted by a channel 30 formed in the central bridge 12 facing the disk 3 and covered by a wall 31 of a sheet-steel cover 32 snap-engaged on the central portion 28 of the bridge. For this purpose, the cover 32 comprises flanges 33a which are bent at right angles and snap-engage grooves 33b formed in the bridge.

It should be noted that the wall 31 is extended inside the first portion 25 by an appendage 34 which extends for about half of the length of the first portion. This appendage 34 divides this half of the first portion into two branches 35 and 36, of which one 35 is directed towards the opening 21 and the other 36 is directed towards the opening 22.

The outlet openings 21 and 22 preferably comprise respective diffuser bodies 37 and 38 which are substantially fan-shaped and are fixed to the elongate elements. 8 and 9 by means of respective pairs of screws 37a and 38a. These diffuser bodies 37 and 38, which are made of aluminium alloy, have respective inlet openings 39 and 40 for the supply of the cooling air. The diffuser bodies 37 and 38 have, respectively, three outlet openings 13b, 14b and 15b, spread out like a fan and three outlet openings 16b, 17b and 18b also spread out like a fan, all directly facing and close to the respective radiator elements.

In particular, respective ducts 41 and 42 formed in the diffuser bodies 37 and 38 extend respectively, from the inlet openings 39 and 40 and branch, respectively, into three ducts 13c, 14c and 15c opening from the outlet openings 13b, 14b and 15b directly onto the radiator elements 13a, 14a and 15a, and into three ducts 16c, 17c and 18c opening from the outlet openings 16b, 17b and 18b directly onto the radiator elements 16a, 17a and 18a.

It should be noted that each diffuser body 37, 38 is in the form of a half-shell in which the ducts are formed as channels. When each diffuser body 37, 38 is fixed by the screws 37a, 38a to the respective elongate element 8, 9 in a position against the internal surfaces 8a, 9a, the half-shell, and hence also its channels, are covered by the elongate body.

In operation, the cooling air coming from an air intake of the motor vehicle passes through the pipe 24, reaches and passes through the duct 19 until it reaches the diffuser bodies 37, 38 and the outlet openings. The cooling air emerges from these and passes directly over the radiator elements.

By virtue of the fact that the outlet openings reach into the immediate vicinity of the radiator elements which they face in close proximity, the cooling is highly effective.

If the pads have to be replaced because they are worn, the caliper body can be removed from the wheel hub directly, simply by detaching the pipe from the connector.

Finally, the disk brake according to the present invention has the advantage of unusually effective cooling of the radiator elements and the brake oil is in practice not susceptible to boiling.

A further advantage of the disk brake according to the present invention lies in the simplicity of the operations to be performed in order to replace the pads.

A further advantage of the disk brake according to the present invention is that it is also structurally simple since the cooling-air duct is formed in an industrially advantageous manner by machining during the manufacture of the caliper body.

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It should also be noted that the disk brake according to the present invention is also structurally strong and functionally reliable.

Naturally, in order to satisfy contingent and specific requirements, an expert in the art may apply to the disk brake of the present invention many modifications and variations all of which, however, are included within the scope of protection of the invention as defined by the following claims.

What is claimed is:

1. A disk brake comprising:

a caliper body, in which a hub-side elongate element, a wheel-side elongate element and connecting bridges extending astride a disk constitute a single part;

pressure means housed in the elongate elements and acting on respective pads by means of radiator elements;

a duct for the passage of cooling air;

said duct formed inside the caliper body and extending between an inlet opening, and at least one outlet opening reaching into the immediate vicinity and directly facing at least one radiator element of the radiator elements; and

a cooling-air feed pipe coupled to said duct for supplying air from an air-intake of a motor vehicle.

2. A disk brake according to claim 1, wherein the duct extends inside at least one of the bridges from an end disposed adjacent the hub-side elongate element.

3. A disk brake according to claim 2, wherein there are three connecting bridges, that is, a central bridge and two end bridges, and in that the duct is formed inside the central bridge.

4. A disk brake according to claim 3, wherein the duct formed inside the central bridge comprises an outlet opening disposed at the height of the radiator elements of the pressure means of the hub-side elongate element and an outlet opening disposed at the height of the radiator elements of the pressure means of the wheel-side elongate element.

5. A disk brake according to claim 4, wherein the pressure means comprise three pistons for each elongate element, each piston having a respective radiator element, and in that each outlet opening comprises a diffuser body having three outlets in a fan-like arrangement.

6. A disk brake according to claim 5, wherein each diffuser body is in the form of a half-shell in a position against the respective elongate element.

7. A disk brake according to claim 5, wherein the duct formed inside the central bridge is constituted by a channel formed in the central bridge and facing towards the disk, and by a wall of a cover snap-engaged on the bridge to cover the channel.

8. A disk brake according to claim 7, wherein the wall comprises an appendage extending into a first portion of the duct.

9. A disk brake comprising:

a caliper body, in which a hub-side elongate element, a wheel-side elongate element and connecting bridges extending astride a disk constitute a single part;

pressure means housed in the elongate elements and acting on respective pads by means of radiator elements;

a duct for the passage of cooling air, formed inside the caliper body and extending between an inlet opening, and at least one outlet opening facing at least one radiator element of the radiator elements, wherein said bridges comprise a central bridge and two end bridges, said duct formed inside the central bridge.



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10. A disk brake according to claim 9, wherein the duct formed inside the central bridge comprises an outlet opening disposed at the height of the radiator elements of the pressure means of the hub-side elongate element and an outlet opening disposed at the height of the radiator elements of the wheel-side elongate element.

11. A disk brake according to claim 10, wherein the pressure means comprise three pistons for each elongate element, each piston having a respective radiator element, and in that each outlet opening comprises a diffuser body having three outlets in a fan-like arrangement.

12. A disk brake according to claim 11, wherein each diffuser body is in the form of a half-shell in a position against the respective elongate element.

13. A disk brake according to claim 11, wherein the duct formed inside the central bridge is constituted by a channel formed in the central bridge and facing towards the disk, and by a wall of a cover snap-engaged on the bridge to cover the channel.

14. A disk brake according to claim 13, wherein the wall comprises an appendage extending into a first portion of the duct.

15. A disk brake comprising:

a caliper body, in which a hub-side elongate element, a wheel-side elongate element and connecting bridges extending astride a disk constitute a single part;

pressure means housed in the elongate elements a portion of said pressure means acting on respective pads;

a duct for the passage of cooling air;

said duct formed inside the caliper body and extending between an inlet opening, and at least one outlet opening reaching into the immediate vicinity and directly facing said pressure means; and

a cooling-air feed pipe coupled to said duct for supplying air from an air intake of a motor vehicle.

16. A disk brake according to claim 15, wherein the duct extends inside at least one of the bridges from an end disposed adjacent the hub-side elongate element.

17. A disk brake according to claim 16, wherein there are three connecting bridges, that is, a central bridge and two end bridges, and in that the duct is formed inside the central bridge.

18. A disk brake according to claim 17, further comprising a radiator element, wherein the duct formed inside the

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central bridge comprises an outlet opening disposed at the height of said radiator elements of the pressure means of the hub-side elongate element and an outlet opening disposed at the height of said radiator elements of the pressure means of the wheel-side elongate element.

19. A disk brake according to claim 18, wherein the pressure means comprise three pistons for each elongate element, each piston having a respective radiator element, and in that each outlet opening comprises a diffuser body having three outlets in a fan-like arrangement.

20. A disk brake according to claim 19, wherein each diffuser body is in the form of a half-shell in a position against the respective elongate element.

21. A disk brake according to claim 19, wherein the duct formed inside the central bridge is constituted by a channel formed in the central bridge and facing towards the disk, and by a wall of cover of a snap-engaged on the bridge to cover the channel.

22. A disk brake according to claim 21, wherein the wall comprises an appendage extending into a first portion of the duct.

23. A disk brake comprising:

a caliper body, in which a hub-side elongate element, a wheel-side elongate element and connecting bridges extending astride a disk constitute a single part;

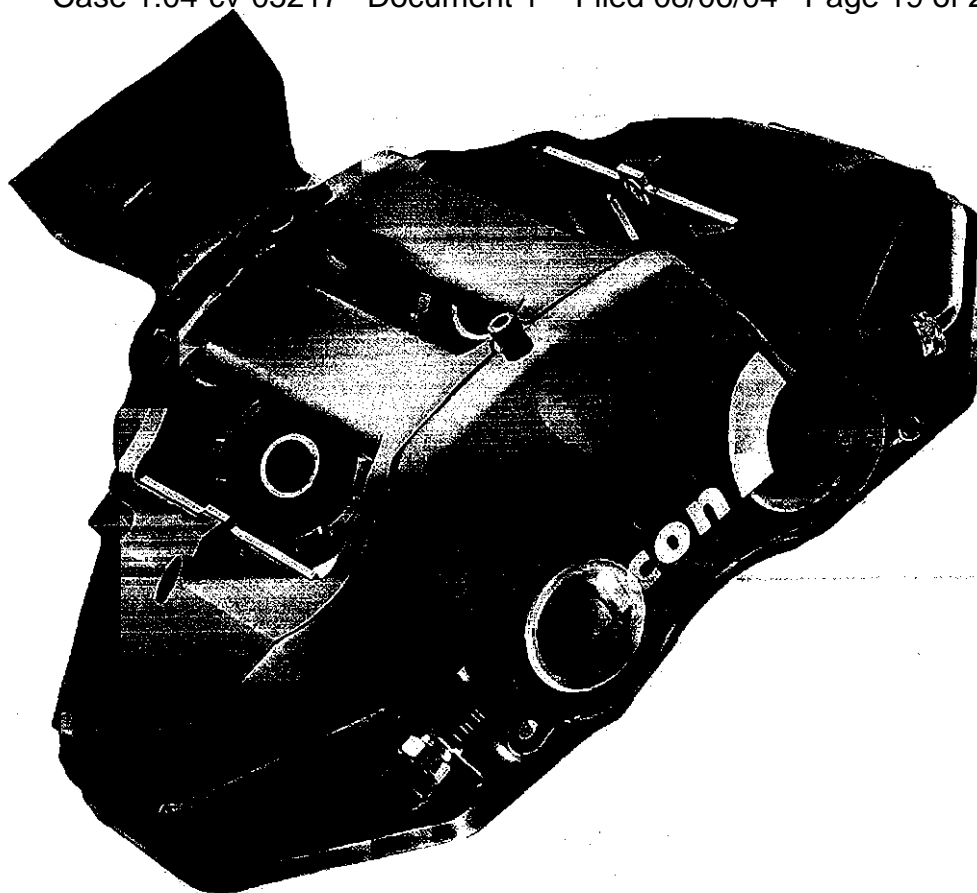
pressure means housed in the elongate elements and acting on respective pads by means of radiator elements, wherein the pressure means comprise three pistons for each elongate element, each piston having a respective radiator element, and in that each outlet opening comprises a diffuser body having three outlets in a fan-like arrangement; and

a duct for the passage of cooling air, formed inside the caliper body and extending between an inlet opening, and at least one outlet opening facing at least one radiator element of the radiator elements, wherein said bridges comprise two end bridges, said duct formed inside the end bridges.

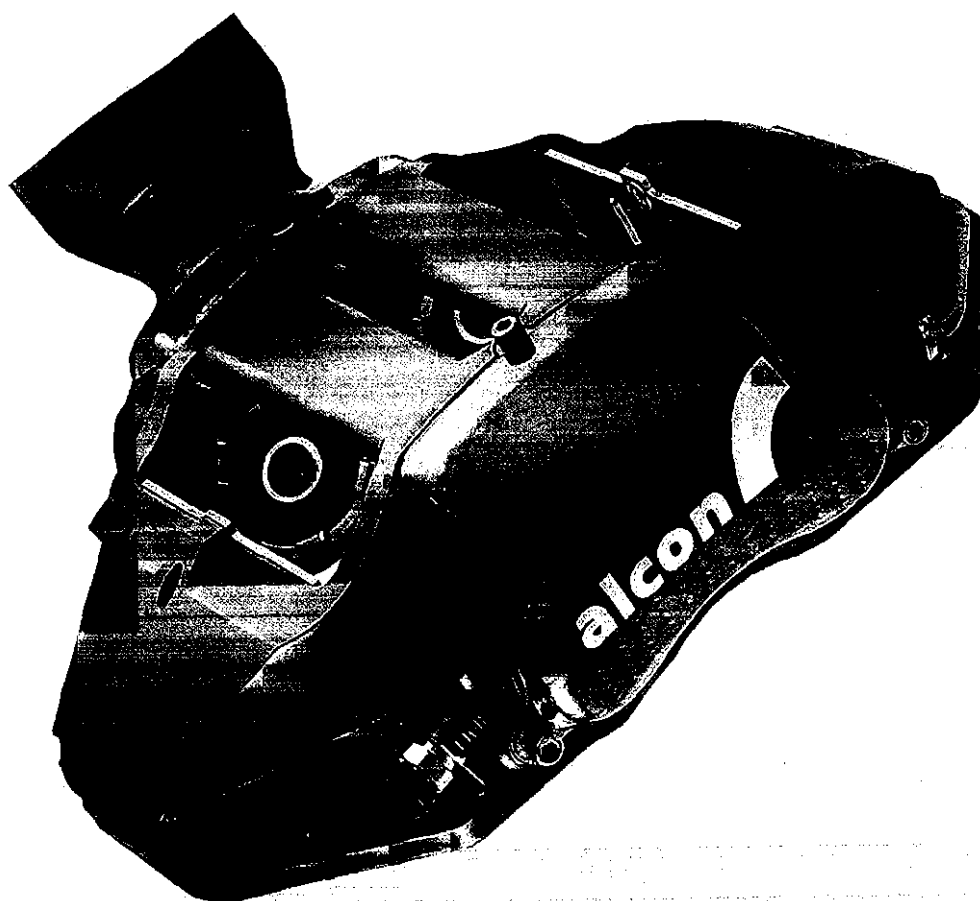
24. A disk brake according to claim 23, wherein each diffuser body is in the form of a half-shell in a position against the respective elongate element.

\* \* \* \* \*

# ***Exhibit B***



Above: A partially 'see-through' photograph, giving a rare view beneath the carbon cowls to reveal the shaped entry ports to the through-piston cooling tubes.



Above: Alcon's internationally patented 'Through-Piston Cooled' monobloc race calliper, shown here with air-directing carbon cowls in place. This version is the NASCAR specification.

# quadrant

Q1.04



Cool under  
extreme pressure

Ceramic brake discs

New Brabus E V12

features Alcon

ceramic brake

package

F1 Technical  
Partnership

Alcon sign new deal  
with BAR F1

**alcon**

engineering your advantage

# Brabus goes ceramic

In partnership with ceramics expert SGL Carbon, Alcon has engineered its first ceramic brake disc for use on high performance road cars.

Although carbon discs have been successfully used in F1 since the 1980's, transporting that technology to high performance road cars was never going to be straightforward, primarily because carbon wears extremely quickly; the frictional performance is comparatively poor when the disc is cold and a huge amount of dust is deposited onto the wheel and bodywork.

John Moore, who has led the project on behalf of Alcon, explains: "The challenge, in partnership with ceramics expert SGL Carbon, was to harness the available technology and develop an alternative product, that would provide a significant improvement in performance at an acceptable price."

Treating carbon with silicon carbide had been shown to have a beneficial effect on the negative aspects of carbon discs. However, the high rate of heat rejection of carbon remains, making protection of other components an important factor; and a new issue, of no concern in racing, also arose: noise.

But as John adds: "Along with SGL Carbon we were determined to find a method of managing the heat and reducing the noise level. We have now achieved that objective without compromising on performance."

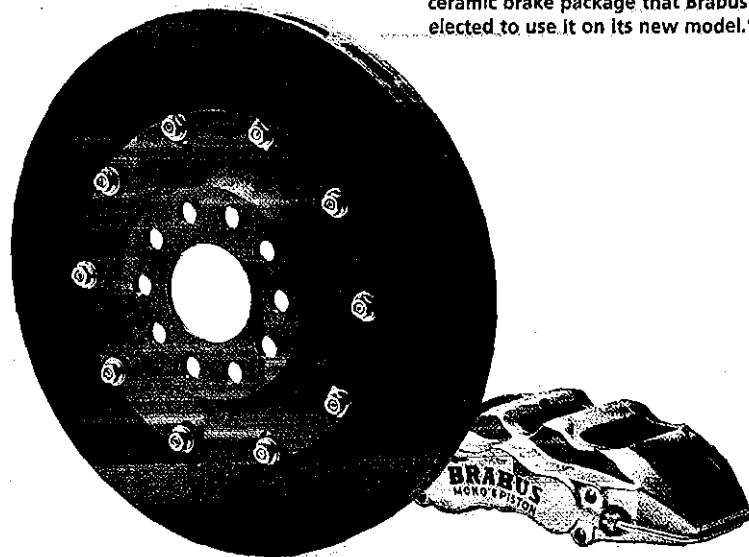
When compared against iron or carbon, the ceramic disc has shown minimal distortion and unrivalled consistency in performance, even under the most extreme braking conditions.

In addition, a reduction in disc wear has emerged as a worthwhile gain. John continues: "We measured the discs after completing 25,000 miles on a Mercedes E-Class, and found they had only lost 20 microns in thickness. It's conceivable that the discs could easily outlive the life of the car!"



With test results clearly delivering a dramatic performance advantage over alternative materials, Brabus has understandably selected Alcon's new ceramic brake disc on its recently premiered E V12 - one of the world's fastest saloon cars.

The E V12 boasts a top speed of 211mph. Its 12 cylinder, 6.3 litre engine reaches 60mph in just 4.2 seconds. John Moore concludes: "With performance features such as these, it's testament to the Alcon ceramic brake package that Brabus has elected to use it on its new model."



The launch of two major products provides the backbone to this edition of Quadrant.

Three years of development and testing has culminated in Alcon unveiling the highly innovative Through Piston Cooled race caliper. Meanwhile, our close collaboration with SGL Carbon has spawned a ceramic disc brake package for high performance road cars delivering quite remarkable levels of friction control and fade resistance.

As Quadrant went to press, the ink had barely dried on our new technical Partnership agreement with B.A.R. F1. The team at Alcon is very excited about this latest venture as B.A.R. F1 is an excellent partner with whom we can develop the next generation of F1 braking systems.



2003 proved to be a successful year for us on the race track and rally stage, the highlight of which was to secure both the drivers' and manufacturers' world rally titles.

In the last Quadrant, I acknowledged the hard work and support of my colleagues in attaining QS9000 accreditation and indicated our intention to secure ISO/TS 16949 sign-off during 2003. I am pleased to say that we have achieved that goal and it is to the credit of everyone in the company that Alcon is one of the first brake manufacturers in the world to be accredited to this very stringent automotive quality standard.

**Alistair Ferguson**  
Managing Director

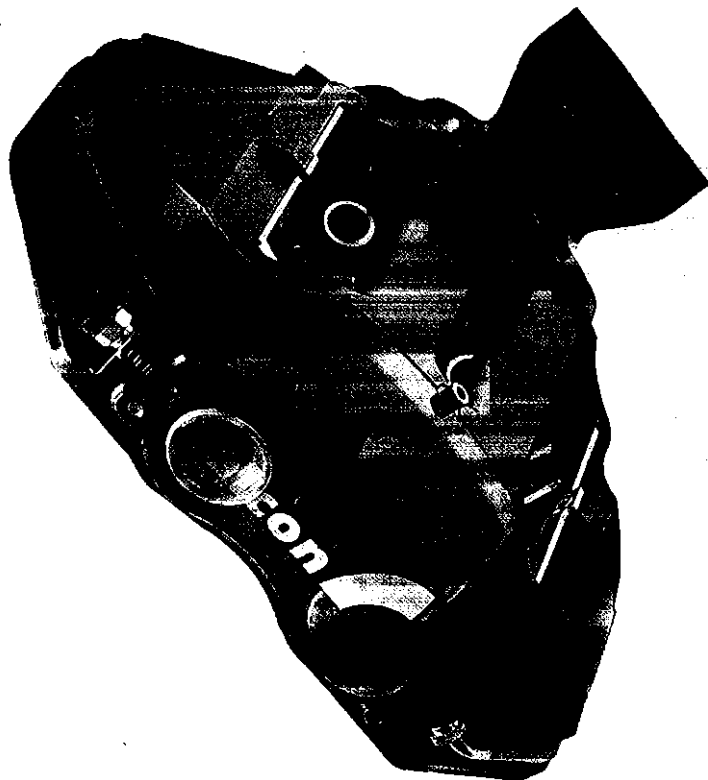
**Front cover**  
Alcon's innovative Through Piston Cooled monobloc race caliper

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Quadrant is the newsletter of the Alcon group of companies

[www.alcon.co.uk](http://www.alcon.co.uk)



# cool under pressure

Following three years of development and exhaustive testing, Alcon has unveiled the world's first 'Through Piston Cooled' race caliper.

Although competition brake technology has moved forward immeasurably during the last twenty years, simultaneous progress in the power and grip of competition cars means that the effective management of heat energy continues to be one of the most significant challenges for the race engineer.

The company's innovative caliper delivers Alcon's signature features - lightness, stiffness and performance, together with a totally new design of body and pistons, which makes far more efficient use of available cooling air to protect the brake fluid from overheating.

Phil Smith, Alcon's Engineering Director, reveals the background to the project and the process by which 'Through Piston Cooling' (TPC) works: "We started investigating TPC back in 2000 and although the caliper was originally destined for another series, it's NASCAR racing with its extreme brake temperatures which has been the first to benefit.

"A tube passes up the centre of each titanium piston. Air is ducted through these tubes, diffusing against the pad back plate through slots in the piston rim. As a result, the sensitive film of brake fluid around each piston is cooled, helping to prevent vaporisation. On the hardest brake tracks, the system increases the safety margin, allowing drivers to push harder for longer. However, because of the much-improved cooling efficiency, we can also significantly reduce cooling duct entry size, thus benefiting the car's aerodynamics, even at tracks that are not so severe on brakes."

In 'back to back' testing on the race track, fluid temperature in a conventional caliper stabilised at 207°C, close to the limit. The switch to TPC calipers gave a reduction in bulk fluid temperature of 40-50°C, protecting the seals from degradation and the loss of piston control properties, as well as the fluid itself.

Allstair Fergusson, Alcon's Managing Director concludes: "We have invested a lot of resources into this development. As such, we have patents applied for and granted throughout the world."

## in brief

### MAZDA CONTRACT

Alcon has secured the exclusive contract to supply the brakes - callipers and discs - to the 2004 Star Mazda Series North American Championship.

### ALCON'S 2003 MOTORSPORT HIGHLIGHTS

World Rally Manufacturers' Title  
Citroën

World Rally Drivers' Championship  
Petter Solberg, (Subaru)

IRL Indy Car Championship  
Scott Dixon, Chip Ganassi Racing

SCCA Speed World Challenge GT  
Championship Manufacturers' Title  
Champion Racing (Audi)



SCCA Speed World Challenge GT  
Championship Drivers' Title  
Randy Pobst

### NEW PRODUCTS

A new range of off-the-shelf brake products, branded Advantage, was launched in the latter half of 2003. The range has been tailored specifically for use by club competitors and more hard-core track day enthusiasts.

### NEW QUALITY STANDARD

Alcon has achieved accreditation for its quality systems to ISO/TS 16949:2002, the very latest and most stringent automotive quality standard.

### STRENGTHENING MANAGEMENT TEAM

Gary Moore, previously with Dana Corporation, has been appointed to the board as Business Development Director. Martin Booth joins as Quality Assurance Manager having worked for 26 years in the US aerospace industry.

### AUSTRALIAN V8 SUPERCAR SERIES

The Holden Racing Team will run Alcon brakes and clutches for a second successive season in 2004.

### US TECHNICAL PARTNERSHIP AGREEMENT

Alcon's Technical Partnership with the PPG-Busch team has been extended into 2004.



## Distributors

<b>Australia</b> PWR Performance Products T: 41 (0) 755 984026 F: 41 (0) 755 984398	<b>Germany</b> Nimex Motorsport T: 49 (0) 2173 54253 F: 49 (0) 2173 51089	<b>Korea</b> Apex Motorsport Group T: 82 (2) 3444 1503/4 F: 82 (2) 3444 1505	<b>UK</b> Trident Racing Supplies T: 44 (0) 1327 86789 F: 44 (0) 1327 85609
<b>Belgium</b> R-Tec Sport T: 32 (0) 713 77707 F: 32 (0) 713 77708	<b>Hong Kong</b> International Motor Sports Promotions Ltd T: 852 255 53939 F: 852 250 31128	<b>Norway</b> Kollevold Rally Import T: 47 32 852091 F: 47 32 852247	<b>EARS Motorsport</b> T: 44 (0) 1625 43377 F: 44 (0) 1625 43361
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<b>France</b> Oreca Diffusion T: 33 (0) 4 94 88 58 01 F: 33 (0) 4 94 32 80 01		<b>Sweden</b> Sällholm Tuning AB T: 46 (0) 221 19430 F: 46 (0) 221 10976	<b>North American Raceparts</b> Indanapolls T: 1 (317) 244 9694 F: 1 (317) 244 9694
			<b>North American Raceparts</b> Moonville T: 1 (704) 658 0074 F: 1 (704) 658 0074

# distributor focus



Above: Ryo Michigami driving the works DOME Honda NSX

## Mitsuharu Kojima, Managing Director of Shiba Lining Company recalls the start of the relationship with Alcon



Above: Mitsuharu (left) meets Jonathan Edwards on a recent visit to Alcon's head offices

"I'd returned to Shiba Lining in 1987, after two years' apprenticeship at Ferodo where I had been introduced to John Moore, a founding director of Alcon."

"Alcon is renowned for manufacturing effective, high quality products, and this is appreciated by our customers."

"Toyota had just announced its intention to contest the 1989 World Endurance Championship and had approached Shiba Lining to supply a revolutionary brake system. My immediate reaction was to discuss the project with John."

On the future, he says: "Demand in Japan for luxury road cars, including imports from Europe and America, continues to grow. In addition, the introduction of the Malaysian Grand Prix and the proposed expansion of the F1 Championship into Russia, China and the UAE will undoubtedly raise the profile of participation and public interest in motorsport across Asia and the Far East. These, coupled with the changing economic status of countries such as China and India, could allow us to expand our operations beyond Japan."

Shiba Lining was the first company in Japan to offer a brake relining service. "Some might suggest we were pioneers in our field" explains Mitsu, "and we have moved on to become a major supplier to the luxury end of the aftermarket sector as well as to motorsport teams competing in Japanese championships, including the Japanese GT Series."

Mitsu concludes: "Alcon has always challenged its existing designs and investigated methods of improving its product - whether using more robust materials, reducing weight or enhancing aesthetic appeal. Most importantly for us, Alcon has continued to be innovative in design and conscious of our specific customer demands."

Mitsu identifies a key reason behind Shiba's continued success: "Our customers are demanding, but extremely loyal. Quality of product and the need to be regarded as an individual are of paramount importance to them."

## Offices

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			<b>NASCAR Support Office</b> T: 1 (704) 799 2723 F: 1 (704) 799 2723 E: thomas@alconusa.com

UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF ILLINOIS

DOCKETED

ED-7  
FILED FOR DOCKETING

**Civil Cover Sheet**

AUG 09 2004

04 AUG -6 PM 4:00

This automated JS-44 conforms generally to the manual JS-44 approved by the Judicial Conference of the United States in September 1974. The data is required for the use of the Clerk of Court for the purpose of initiating the civil docket sheet. The information contained herein neither replaces nor supplements the filing and service of pleadings or other papers as required by law. This form is authorized for use only in the Northern District of Illinois.

**Plaintiff(s): Freni Brembo, S.p.A. and Brembo North America, Inc.**

**Defendant(s): Alcon Components, Ltd. and Alcon Components, Inc.**

County of Residence: N/A; Italian Corporation

County of Residence: N/A; British Corporation

Plaintiff's Atty: See Attachment  
Brinks Hofer Gilson & Lione  
455 North Cityfront Plaza  
Drive, Suite 3600, Chicago, IL  
60611  
312-321-4200

Defendant's Atty:

**04C 5217**

II. Basis of Jurisdiction:

**3. Federal Question (U.S. not a party)**

III. Citizenship of Principal Parties (Diversity Cases Only)

**JUDGE KENNELLY**

Plaintiff: - N/A

Defendant: - N/A

**MAGISTRATE JUDGE BOBRICK**

IV. Origin :

**1. Original Proceeding**

V. Nature of Suit:

**830 Patent**

VI. Cause of Action:

**Patent Infringement pursuant to 35 U.S.C. 1, 271 and 285**

VII. Requested in Complaint

Class Action: No

Dollar Demand:

Jury Demand: Yes

VIII. This case IS NOT a refiling of a previously dismissed case.

Signature: Amanda M. Church

Date: August 6, 2004

If any of this information is incorrect, please go back to the Civil Cover Sheet Input form using the *Back* button in your browser and change it. Once correct, print this form, sign and date it and submit it with your new civil action. **Note: You may need to adjust the font size in your browser display to make the form print properly.**

Revised: 06/28/00



## **ATTACHMENT TO CIVIL COVER SHEET**

FRENI BREMBO, S.p.A., an Italian Corporation  
and BREMBO NORTH AMERICA, INC., a Delaware Corporation,  
Plaintiffs,

v.

ALCON COMPONENTS, LTD, a British Corporation and  
ALCON COMPONENTS (USA) INC., a Delaware Corporation,  
Defendants.

### **ATTORNEYS REPRESENTING PLAINTIFFS**

William H. Frankel, Esq.  
Michael P. Chu, Esq.  
Amanda M. Church, Esq.  
BRINKS HOFER GILSON & LIONE  
455 N. Cityfront Plaza Drive  
NBC Tower, Suite 3600  
Chicago, Illinois 60611

**UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF ILLINOIS**

**DOCKETED**

In the Matter of

EASTERN DIVISIONED-7  
FILED FOR DOCKETING  
04 AUG -6 PM  
CLERK  
U.S. DISTRICT COURT

AUG 09 2004

Freni Brembo, S.p.A and  
Brembo North America, Inc.,

Plaintiffs,

v.  
Alcon Components, Ltd. and  
Alcon Components, Inc.,

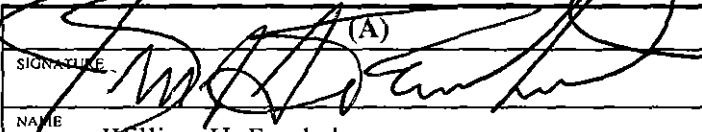
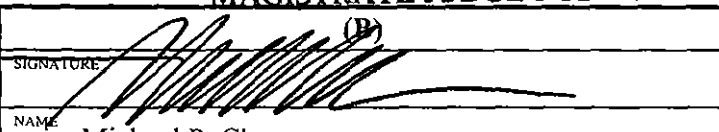
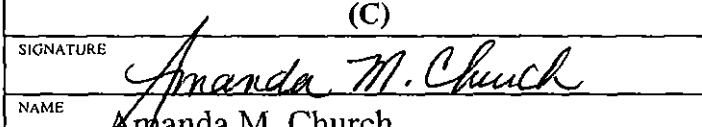
Defendants.

Case Number  
**04C 5217**

APPEARANCES ARE HEREBY FILED BY THE UNDERSIGNED AS ATTORNEY(S) FOR:

Plaintiffs: Freni Brembo, S.p.A., an Italian Corporation and Brembo North America, Inc., a Delaware Corporation

**JUDGE KENNELLY****MAGISTRATE JUDGE BOBRICKA**

SIGNATURE  (A)		SIGNATURE  (B)	
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		DESIGNATED AS LOCAL COUNSEL? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	
(C)		(D)	
SIGNATURE 		SIGNATURE	
NAME Amanda M. Church		NAME	
FIRM Brinks Hofer Gilson & Lione		FIRM	
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